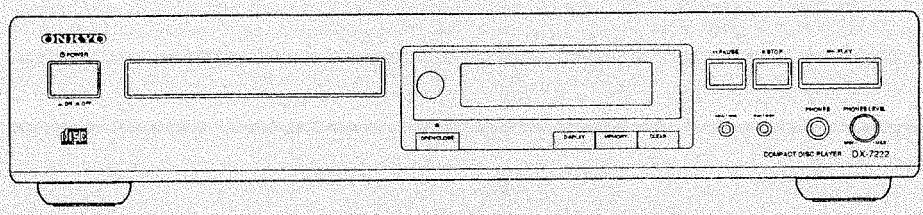
SERV. 31230

DX-7222

Ref. No. 3635
091999

ONKYO® SERVICE MANUAL

COMPACT DISC PLAYER
MODEL DX-7222



Black, Silver and Golden models

SMP, BMP, BMPT, GMPT	230V AC, 50Hz
BMWT, GMWT	220-230V/120V AC, 50/60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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ONKYO®
AUDIO COMPONENTS

SPECIFICATIONS

Signal readout system:	Optical non-contact
Reading rotation: (constant linear velocity)	About 500 - 200 r.p.m.
Linear velocity:	1.2 - 1.4 m/s
Error correction system:	Cross Interleave Reed-Solomon code
D/A converter:	1 bit PWM/ACCUPULSE
Sampling frequency:	352.8 kHz (8 times oversampling)
Number of channels:	2 (stereo)
Frequency response:	5 Hz - 20 kHz
Total harmonic distortion:	0.005% (at 1 kHz)
Dynamic range:	96 dB
Signal to noise ratio:	90 dB
Channel separation:	85 dB (at 1 kHz)
Wow and Flutter:	Below threshold of measurability
Output level:	2 volts r.m.s.
Power consumption:	9 watts
Power supply:	120 V, 60 Hz 230V, 50 Hz 220-230V/120V switchable, 50/60 Hz
Dimensions (W × H × D):	435 × 91 × 308 mm (17-1/8" × 3-9/16" × 12-1/8")
Weight:	3.7 kg (8.2 lbs.)

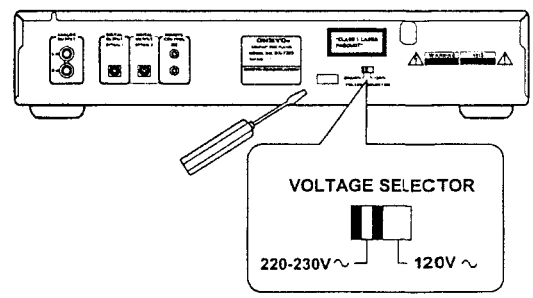
Specifications and features are subject to change without notice.

SERVICE PROCEDURES

Setting the voltage selector (Worldwide model only)

Worldwide models are equipped with a voltage selector to conform with local power supplies. Be sure to set this switch to match the voltage of the power supply in your area before plugging in the unit.

1. Determine the proper voltage for your area: 220-230 V or 120 V.
2. If the preset voltage is not correct for your area, insert a screwdriver into the groove in the switch. Slide the switch all the way to the right (120 V) or to the left (220-230 V), whichever is appropriate.



CAUTION ON REPLACEMENT OF OPTICAL PICK UP

The laser diode in the optical pickup block is so sensitive to static electricity,surge current and etc, that the components are liable to be broken down or its reliability remarkably deteriorated.

During repair,carefulley take the following precautions. (The following precautions are included in the service parts.)

PRECAUTIONS

1.Ground for the work-desk.
Place a conductive sheet such as a sheet of copper (with inpedance lower than 10MΩ) on the work-desk and place the set on the conductive sheet so that the chassis.

2.Grounding for the test equipment and tools.
Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.

3.Grounding for the human body.
Be sure to put on a wrist-strap for grounding whose other end is grounded.
Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.

4.Select a soldering iron that permits no leakage and have the tip of the iron well-grounded.

5.Do not check the laser diode terminals with the probe of a circuit tester or oscilloscope.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

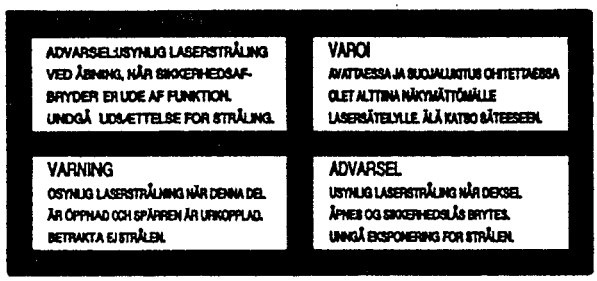
WARNING!!
WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMMISION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

Laser Diode Properties
- Material: GaAS/GaAlAs
- Wavelength: 760~780nm
- Emission Duration: continuous
- Laser Output: max. 0.5mW*

* This output is the value measured at a distance about 1.8mm from the objective lens surface on the Optical Pick-up Block.

LASER WARNING LABEL

The labels shown below are affixed.


ADVARSEL! USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAF-BRYDER ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!
VARNING
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.
ADVARSEL
USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.

ADVARSEL

Denna maekning er anbragt på apparatets højre side og indikerer, at apparatet arbejder med laserstråler af klasse 1, hvilket betyder, at der anvendes laserstråler af svageste klasse, og at man ikke på apparatets yderside kan blive udsat for utilladelig kraftig stråling.

APPARATET BØ/R KUN ABNES AF FAGFOLK MED SE RLIGT KENDSKAB TIL APPARATER MED LASERSTRÅLER!

Indvendigt i apparatet er anbragt den her gengivne advarselsmérkning, som advarer imod at foretage sådnne indgreb i apparatet, at man kan komme til at udsaette sig for laserstråling.

VAROITUSI LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSA KÄYTTOOHJEESSA MAINTULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTÖMALLE LASERSÄTEILYLLE.

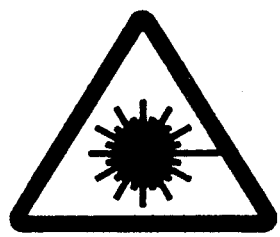
The label shown below are affixed.

1. Warning label

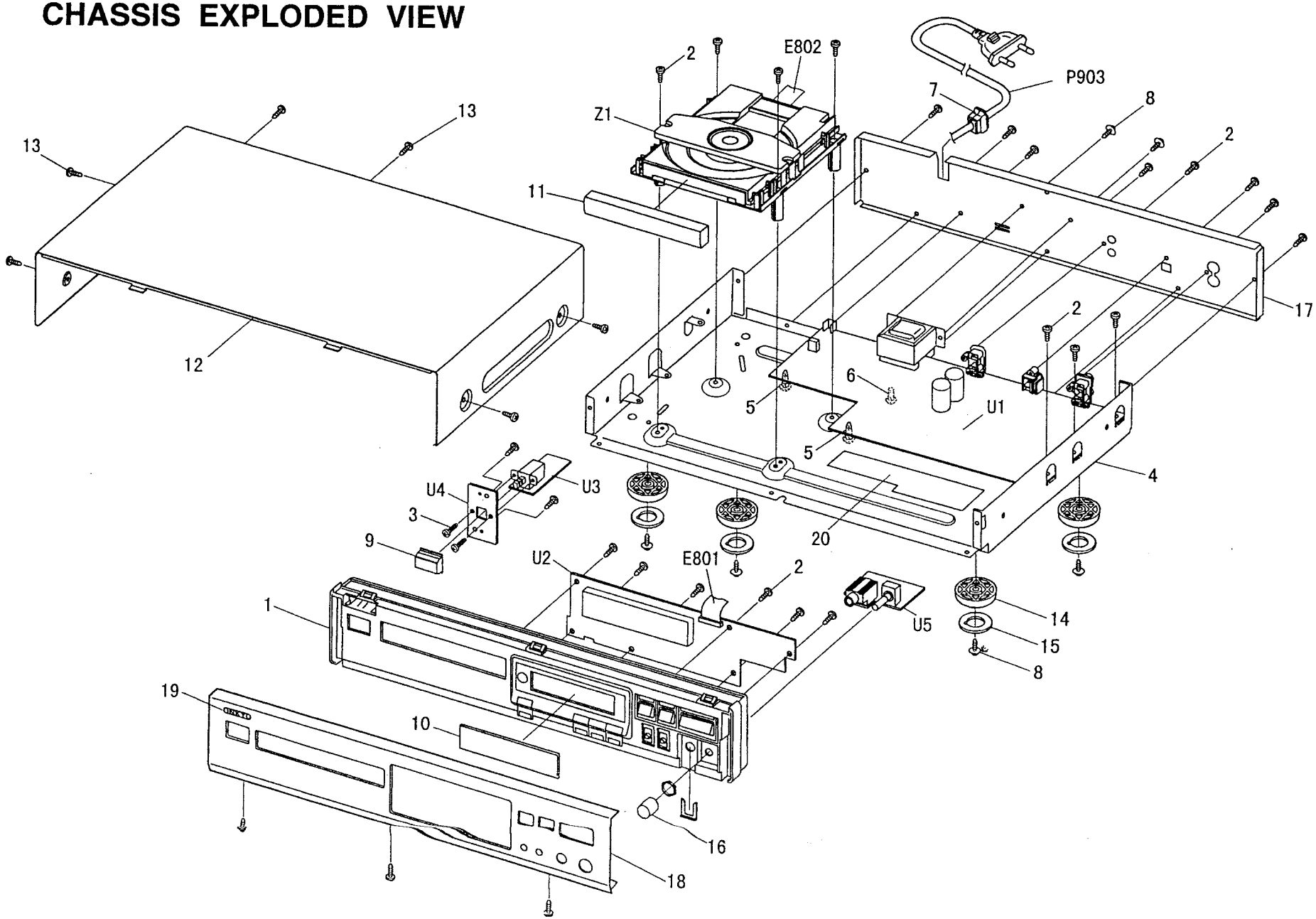
DANGER —INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK FAILED OR DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.

CAUTION —HAZARDOUS LASER AND ELECTROMAGNETIC RADIATION WHEN OPEN AND INTERLOCK DEFEATED

ATTENTION —RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX SI OUVERT AVEC L'ECLENCHEMENT DE SECURITE ANNULE.



CHASSIS EXPLODED VIEW



CHASSIS EXPLODED VIEW PARTS LIST

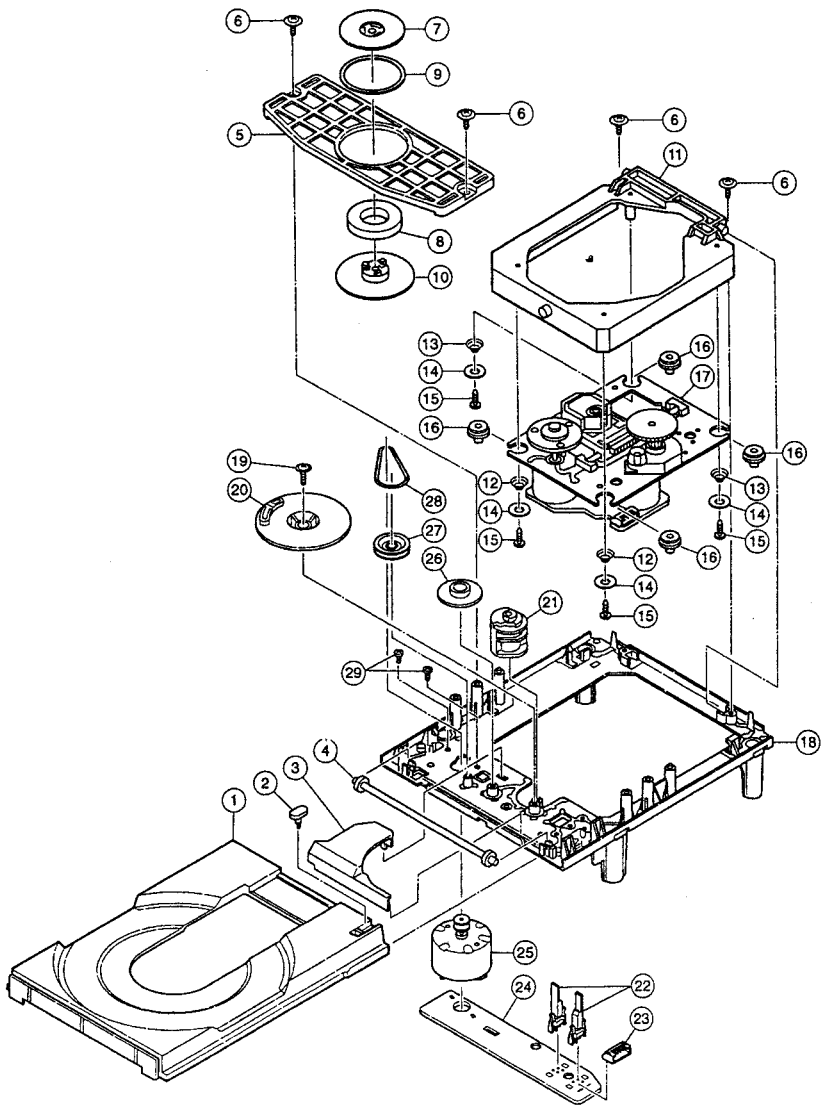
REF.NO.	PART NO.	DESCRIPTION
1	27111118	Front bracket <B>
	27111119	Front bracket <S>
	27111120	Front bracket <G>
2	838130088	3TTB+8B,Self tapping screw
3	82143010	3P+10FN(BC),Self tapping screw
4	27100374	Chassis
5	27190657-1	LSR-18R,Holder
6	27190926-1	LSR-18p,Holder
7	27300750	⚠ Bushing,cord
8	831430088	3TTW+8B(BC),Self tapping screw
9	28325465	Knob,POW <B>
	28325466	Knob,POW <S>
	28325516Y	Knob,POW <G>
10	28191852	Clear plate <B>
	28191853	Clear plate <S,G>
11	28148415	Door,CD <B>
	28148405A	Door,CD <S>
	28148416	Door,CD <G>
12	28184670-1	Top cover <B>
	28184671-1	Top cover <S>
	28184687-1	Top cover <G>
13	838430088	3TTB+8B(BC),Self tapping screw <B>
	838930088	3TTB+8B(UN),Self tapping screw <S,G>
14	27175316B	Leg
15	28141332	Cushion
16	28325452	Knob,MIC <B>
	28325515	Knob,MIC <S>
	28325495	Knob,MIC <G>

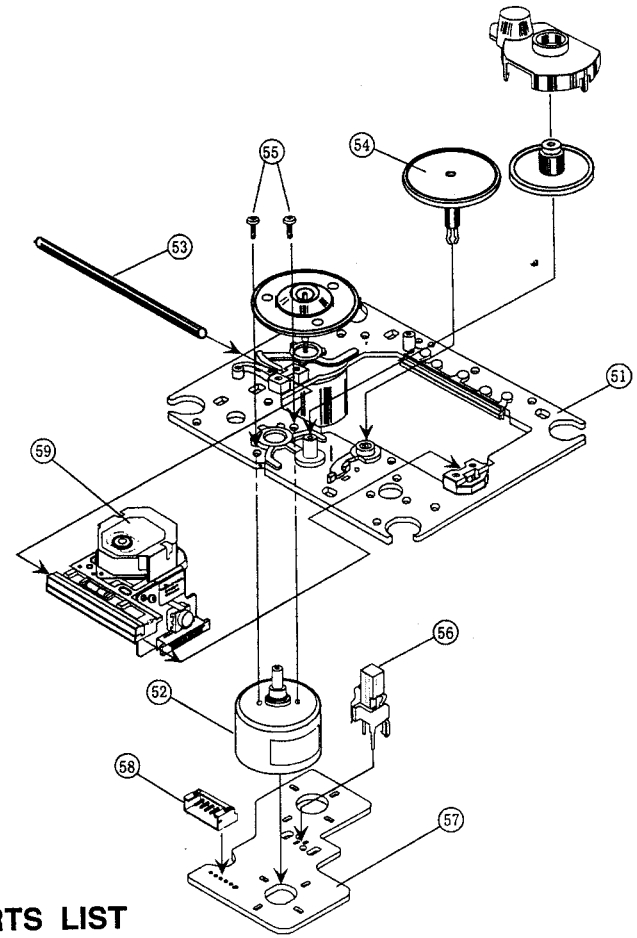
REF.NO.	PART NO.	DESCRIPTION
17	27122597B	Rear panel <P>
	27122624B	Rear panel <PT>
	27122625B	Rear panel <WT>
18	27212105	Front panel <B>
	27212106	Front panel <S>
	27212122	Front panel <G>
19	28135244	Badge <B>
	28135245	Badge <S>
20	29361957	Label
E801	2047251512	NCFC7-251512,Flexible cable
E802	2042161012	NCFC2-161012,Flexible cable
E805	260208	Wire tie
P903	253195MAR or	⚠ AS CEE,power supply cord or
	253193HIT	⚠ AS-CEE,power supply cord
U1	1H404546-1A	NAAR-6646-1A,Main circuit PC board ass'y <P,PT>
	1H404546-1B	NAAR-6646-1B,Main circuit PC board ass'y <WT>
U2	1H404547-1A	NADIS-6647-1A,Display circuit PC board ass'y <P,PT>
	1H404547-1B	NADIS-6647-1B,Display circuit PC board ass'y <WT>
U3	1H404548-1A	NASW-6648-1A,Power switch PC board ass'y <P,PT>
	1H404548-1B	NASW-6648-1B,Power switch PC board ass'y <WT>
U4	1H404549-1A	NAETC-6649-1A, PC board for holder
U5	1H404550-1A	NAETC-6650-1A,Volume PC board ass'y <P,PT>
	1H404550-1B	NAETC-6650-1B,Volume PC board ass'y <WT>
Z1	24800018A	NCD-170S,CD mechanism

NOTE : THE COMPONENTS IDENTIFIED BY THE MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

NOTE : <P> : European model only
<PT> : Asian model only
<WT> : Taiwanese model only
<S> : Silver model only
<B> : Black model only
<G> : Golden model only

CD MECHANISM EXPLODED VIEW





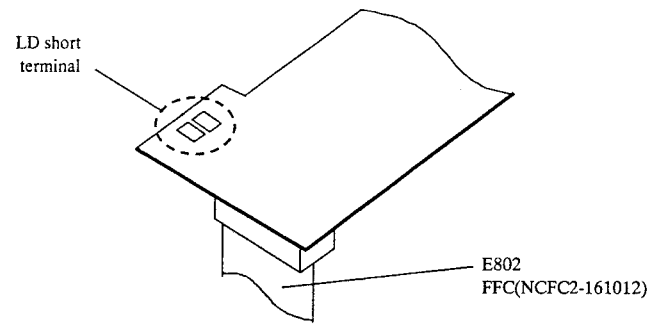
PARTS LIST

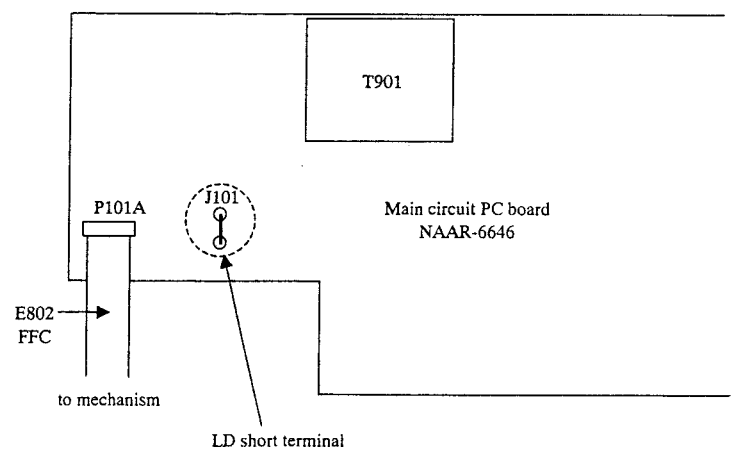
Ref.No.	Part No.	Description
1	2646-290-01	Tray
2		Stopper
3	2625-544-01	Gear cover
4	2625-535-01	Tray gear
5	2625-546-01	Chucking plate
6		PTPWH2.6x7,Screw
7	2625-537-01	Chucking yoke
8	1452-493-21	Magnet
9	2625-541-02	Damper
10	2646-291-01	Chucking pulley
11	2646-288-01	Sub chassis
12	2627-236-01	Coil spring (front)
13	2627-235-01	Coil spring (back)
14	2646-289-01	Washer
15		P2.6x10, Screw
16	2627-234-01	Insulator
17		KSM-213CCM, Pickup drive unit
18	2625-552-06	Main chassis
19	3319-501-51	PTPWH2.6x16, Screw
20	2625-547-01	Drive Gear
21	2625-545-04	Control cam
22	1692-667-11	Leaf switch
23	1564-721-11	Socket
24	1640-523-11	Loading PC board
25	X2625-117-1	Loading motor ass'y
26	2625-274-02	Midway gear
27	2625-536-02	Loading pulley
28	3653-387-00	LM belt
29		B2.6x2.5, Screw
51	X2625-877-1	Motor chassis ass'y
52	X2625-769-1	Motor gear ass'y
53	2626-908-01	Sled shaft
54	2626-907-01	Gear
55		P2x3, Screw
56	1572-085-11	Leaf switch
57	1639-678-12	Motor PC board
58	1564-722-11	Socket
59	8848-483-05	KSS-213C, Pickup

REPLACEMENT OPTICAL PICKUP

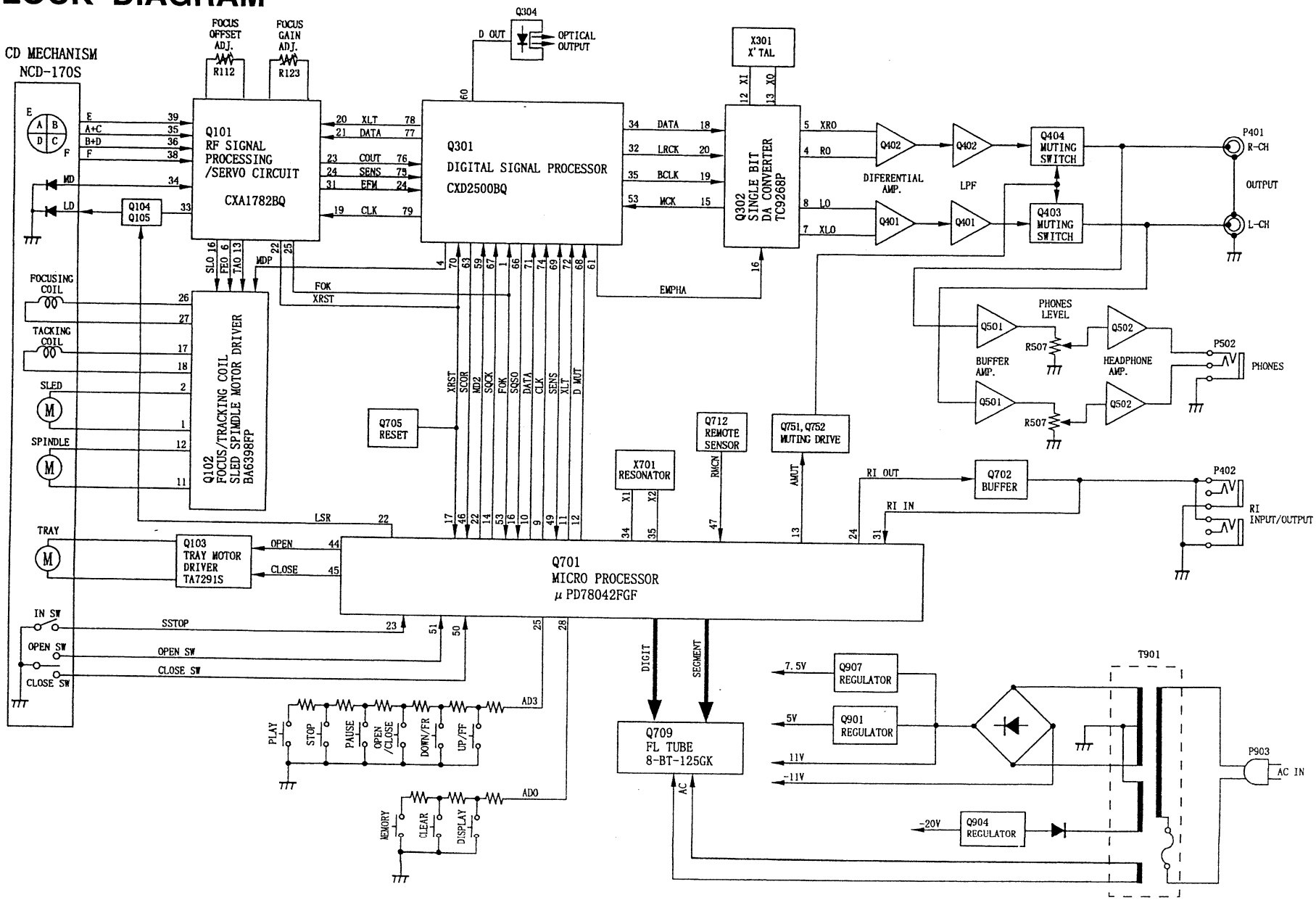
The laser diode in the optical pickup block is so sensitive to static electricity, surge current and etc. That the components are liable to be broken down or its reliability remarkably deteriorated.
During repair, carefully take the following precautions.
Do not touch the optical pickup object lens with the hands.

1. When replacing the optical pick up, first short J101 on Main PC board(NAAR-6646).
2. Solder the LD terminal on Mechanism.
3. Disconnect the flexible flat cable E802.
4. Replace the optical pickup.
5. Connect the flexible flat cable E802.
6. Unsolder the LD terminal on Mechanism.
7. Cut J101.





BLOCK DIAGRAM

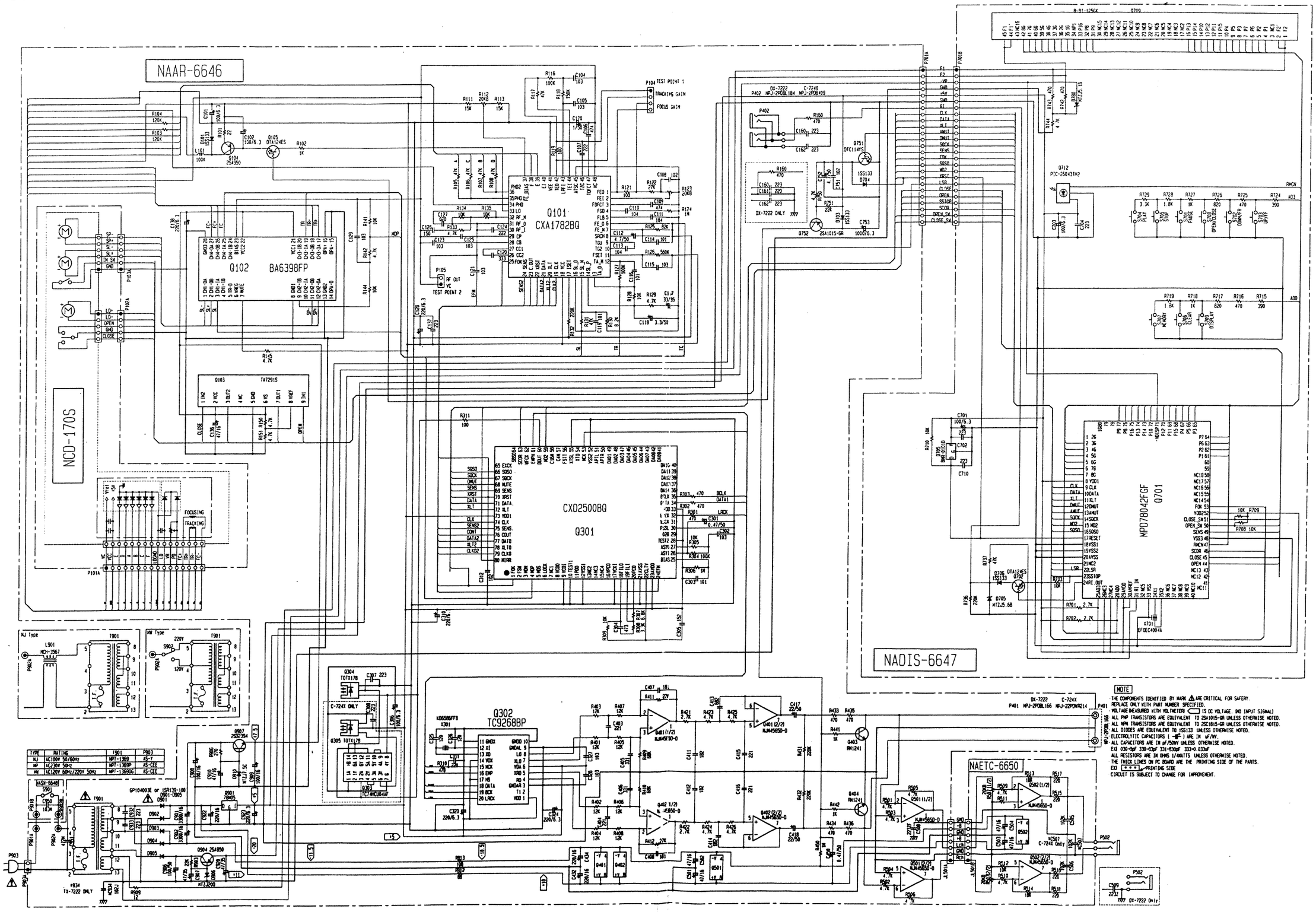


MICROPROCESSOR TERMINAL DESCRIPTION

Pin No.	Function	I/O	Logic	Description
1	3G	O	H	Grid output pins of FL tube.
2	4G	O	H	
3	5G	O	H	
4	6G	O	H	
5	7G	O	H	
6	8G	O	H	
7	9G	O	H	
8	VDD	I		Power source pin(+5V).
9	CLK	O	CLK	Command transfer clock output pin to signal processing IC.
10	DATA	O	H	Command transfer data output pin to signal processing IC.
11	XLT	O	L	Command transfer latch output pin to signal processing IC.
12	DMUT	O	H	Digital muting control output pin to signal processing IC.
13	AMUT	O	H	Muting output pin to analog circuit.
14	SQCK	O	CLK	Subcode reading clock output pin to signal processing IC.
15	MD2	O	H	Enable signal output pin of optical output to signal processing IC.
16	SQSO	I	H	Subcode data input pin from signal processing IC.
17	RESET	I	L	Reset signal input pin.
18	GND	I	L	No used. (Connect to GND)
19	GND	I	L	No used. (Connect to GND)
20	AVSS	I	L	Power supply for A/D converter.(Ground)
21	NC	I	H	No used.
22	LSR	O	H	Laser control output pin.
23	SSTOP	I	L	Pickup innermost position detection switch input pin.
24	RI.OUTPUT	O	L	System signal output pin.
25	AD3	I		Operation key connection pin 3.
26	AD2	I		Operation key connection pin 2.
27	AD1	I		Operation key connection pin 1.
28	AD0	I		Operation key connection pin 0.
29	AVDD	I	H	Power supply for A/D converter.(+5V)
30	AVREF	I	H	Reference Power supply for A/D converter.(+5V)
31	RI.INPUT	I	H	System signal input pin.
32	NC	O		No used.
33	VSS	I	L	Ground pin.
34	X1	I	CLK	System clock oscillation circuit input pin.
35	X2	O	CLK	System clock oscillation circuit output pin.
36	NC	O		No used.
37	NC	O		
38	NC	O		
39	NC	O		
40	NC	O		

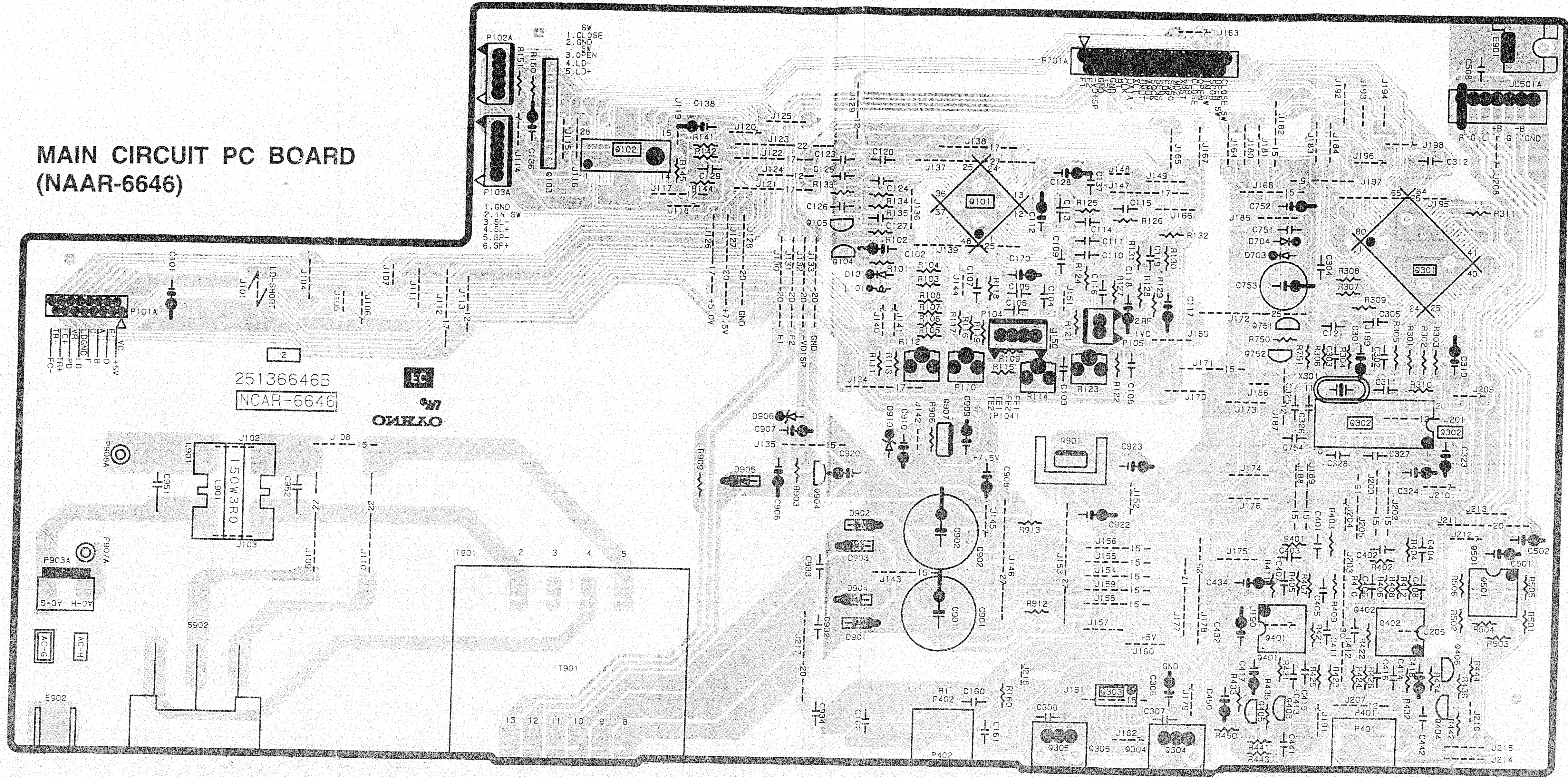
Pin No.	Function	I/O	Logic	Description
41	NC	O		No used.
42	NC	O		
43	NC	O		
44	OPEN	O	L	Tray control output pin.
45	CLOSE	O	L	Tray control output pin.
46	SCOR	I	H	Subcode frame detection signal input pin from signal processing IC.
47	RMCN	I	L	Remote control signal input pin.
48	GND	I	L	Ground pin.
49	SENS	I	H/L	Sense signal input pin from signalprocessing IC.
50	OUTSW	I	L	Tray open switch input pin.
51	INSW	I	L	Tray input switch input pin.
52	VDD	I	H	Power supply pin.(+5V)
53	FOK	I	H	Focus OK signal input pin.
54	NC	O		No used.
55	NC	O		
56	NC	O		
57	NC	O		
58	NC	O		
59	NC	O		
60	NC	O		
61	P1	O	H	Segment output pins.
62	P2	O	H	
63	P3	O	H	
64	P4	O	H	
65	P5	O	H	
66	P6	O	H	
67	P7	O	H	
68	P8	O	H	
69	P9	O	H	
70	P10	O	H	
71	-VDISP	I		Negative power supply pin of FL tube.
72	P11	O	H	Segment output pins.
73	P12	O	H	
74	P13	O	H	
75	P14	O	H	
76	P15	O	H	
77	P16	O	H	
78	NC	O		No used.
79	1G	O	H	Segment output pins.
80	2G	O	H	

SCHEMATIC DIAGRAM

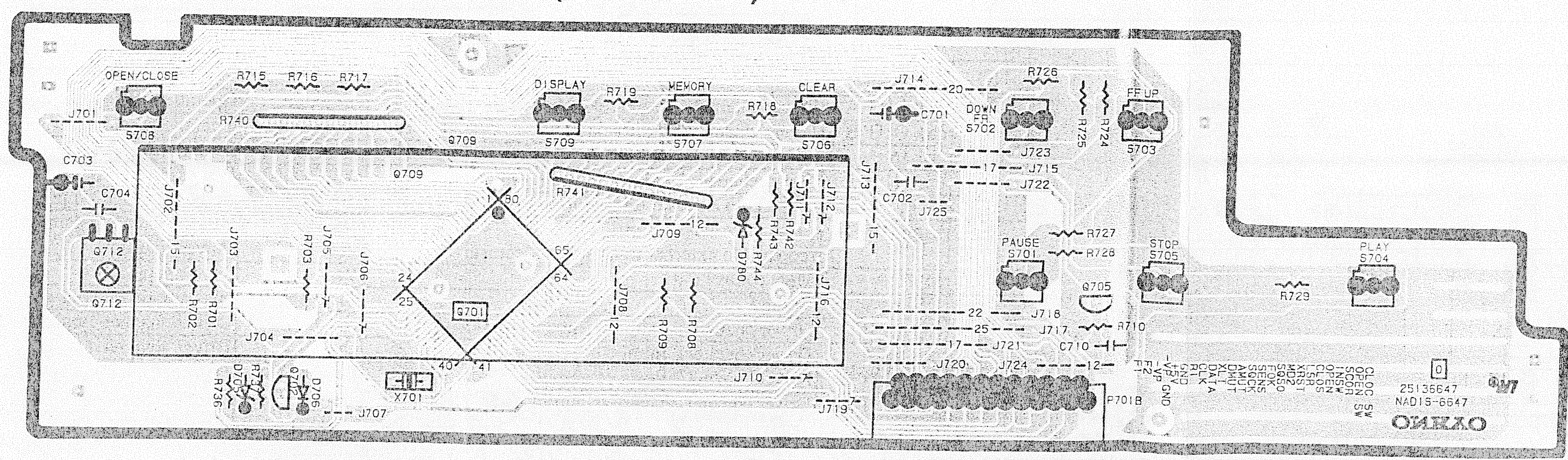


PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

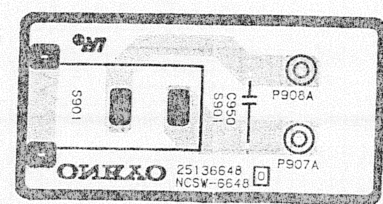
MAIN CIRCUIT PC BOARD (NAAR-6646)



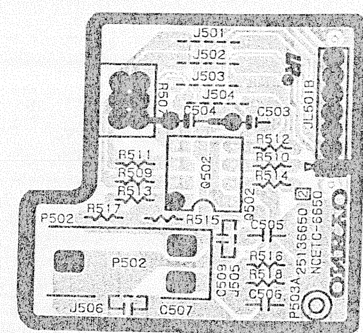
DISPLAY CIRCUIT PC BOARD (NADIS-6647)



POWER SWITCH PC BOARD (NASW-6648)

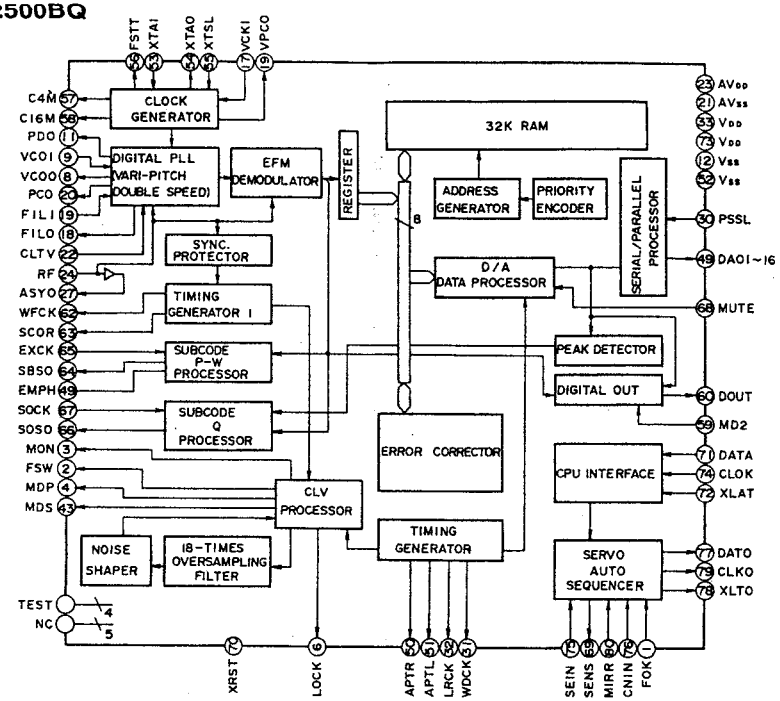


VOLUME PC BOARD (NAETC-6650)



IC BLOCK DIAGRAMS AND DESCRIPTIONS

CXD2500BQ



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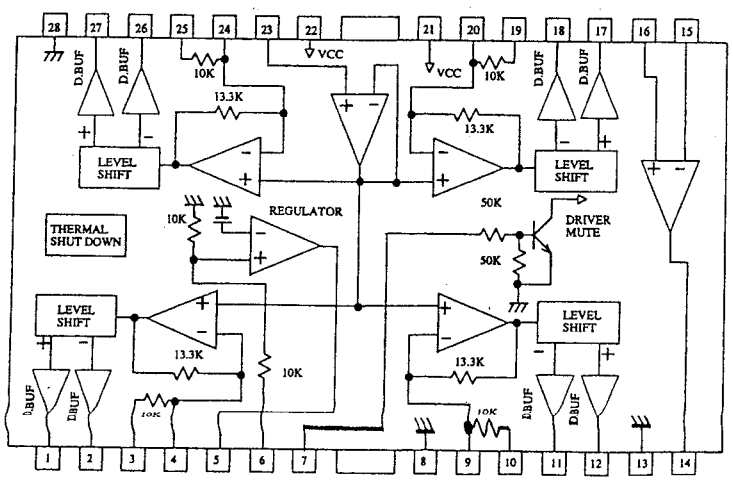


CXD2500BQ

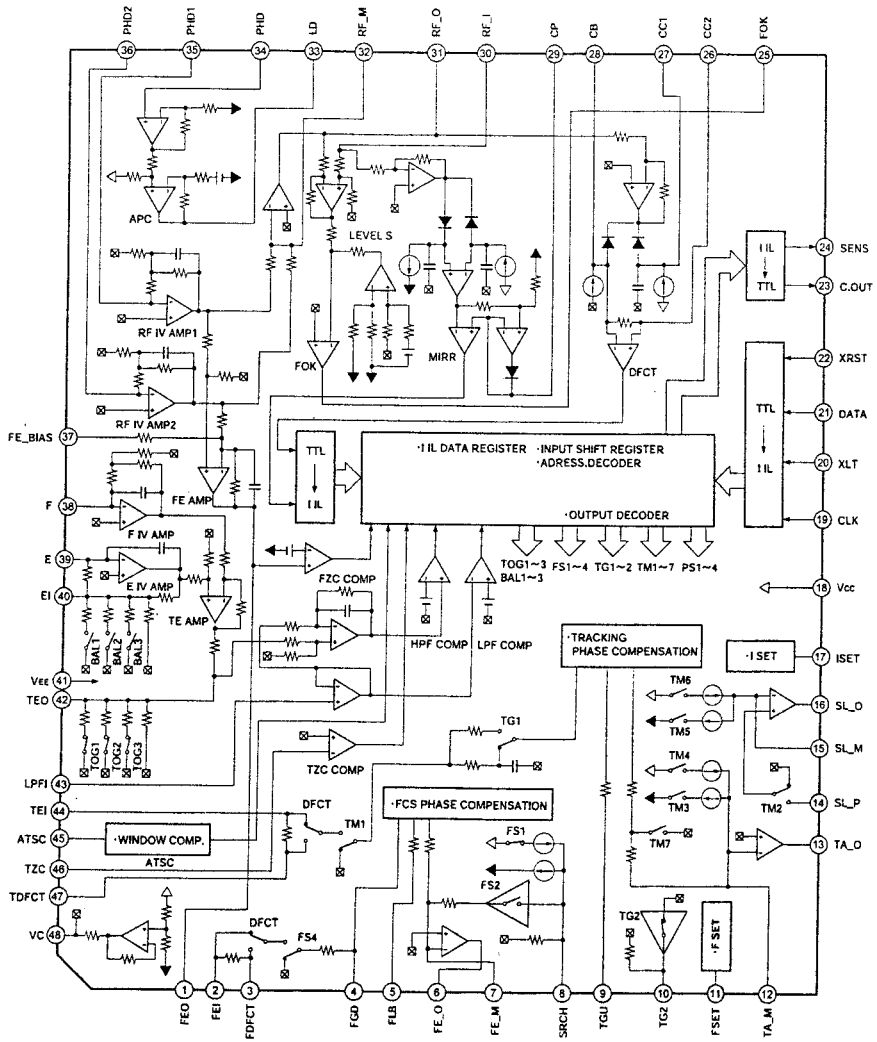
NO.	SYMBOL	I/O	DESCRIPTION
1	FOK	I	Focus OK input
2	FSW	O	Output filter changeover output of spindle motor
3	MON	O	Spindle motor control output
4	MDP	O	Spindle motor servo control
5	MDS	O	Spindle motor servo control
6	LOCK	O	H when GFS is high
7	NC		
8	VCOO	O	Oscillation circuit output for analog FEM PLL
9	VCOI	I	Oscillation circuit input for analog EFM PLL (8.6436MHz)
10	TEST	I	Test terminal
11	PDO	O	Charge pump output for analog EFM PLL
12	Vss		Ground terminal
13-15	NC		
16	VPCO	O	PLL charge pump output for variable pitch
17	VCKI	I	Clock input for variable pitch from VCO (16.934MHz)
18	FILO	O	Filter output for master PLL
19	FILI	I	Filter input for master PLL
20	PCO	O	Charge pump output for master PLL
21	AVss		Analog ground
22	CLTV	I	VCO control voltage input for master
23	AVDD		Analog section power supply (+5V)
24	RF	I	EFM signal input
25	TEST2	I	Connect to the ground.
26	TEST3	I	Connect to the ground.
27	ASYO	O	EFM full swing output
28	TEST4	I	Connect to the ground.
29	NC		
30	PSSL	I	Audio data output mode changeover input. Serial data at L and paraller data at H.
31	WDCK	O	D/A interface for 48 bits slot. Word clock f=2Fs.
32	LRCK	O	D/A interface for 48 bits slot. LR clock f=Fs.
33	VDD		Power supply terminal (+5V)
34-49			Data output terminals

			PSSL=1	PSSL=0
34	DA16	O	DA16	Serial data of 48 bits slot
35	DA15	O	DA15	Bit clock of 48 bits slot
36	DA14	O	DA14	Serial data of 64 bits slot
37	DA13	O	DA13	Bit clock of 68 bits slot
38	DA12	O	DA12	LR clock of 68 bits slot
39	DA11	O	DA11	GTOP output
40	DA10	O	DA10	XUGF output
41	DA09	O	DA09	XPLCK output

NO.	SYMBOL	I/O	DESCRIPTION
42	DA08	O	DA08 GFS output
43	DA07	O	DA07 RFCK output
44	DA06	O	DA06 C2P0 output
45	DA05	O	DA05 XRAOF output
46	DA04	O	DA04 MNT3 output
47	DA03	O	DA03 MNT2 output
48	DA02	O	DA02 MNT1 output
49	DA01	O	DA01 MNT0 output
50	APTR	O	Control output for aperture correction. H when Rch.
51	APTL	O	Control output for aperture correction. H when Lch.
52	Vss		Ground
53	XTAI	I	Crystal oscillation circuit input of 16.9344MHz or 33.8688MHz input
54	XTAO	O	Crystal oscillation circuit output of 16.9344MHz
55	XTSL	I	Crystal selection input terminal. L when 16.9344MHz. H when 33.8688MHz.
56	FSTT	O	2/3 divided output of pins 53 & 54
57	C4M	O	4.2336MHz output
58	C16M	O	16.9344MHz output
59	MD2	I	Digital output control input. On at H & Off at L.
60	DOUT	O	Digital output
61	EMPH	O	Emphasis control output. Active H.
62	WFCK	O	Write frame clock output
63	SCOR	O	Sub-code detection output. H when is detected S0 or S1.
64	SBSO	O	Serial output of sub code (P-W)
65	EXCK	I	Clock input for read out SBSO
66	SQSO	O	Sub Q 80 bits. PCM peak. and level data 16 bits output
67	SQCK	I	Clock input for read out SQSO
68	MUTE	O	Muting control output. Active H.
69	SENS	-	Sens output. Output to microprocessor
70	XRST	I	System reset. Rest at low level.
70	DATA	I	Serial data input from microprocessor
72	XLTA	I	Latch input from microprocessor. Latch the serial data at trailing.
73	VDD		Power supply
74	CLOK	I	Serial data transfer clock input from microprocessor
75	SEIN	I	Sens input from SSP
76	CNCI	I	Track jump numbers count signal input
77	DATO	O	Serial data output to SSP
78	XLTO	O	Serial data latch output to SSP. Latch at trailing.
79	CLKO	O	Serial data transfer clock output to SSP
80	MIRR	I	Mirror signal input

BA6398EP

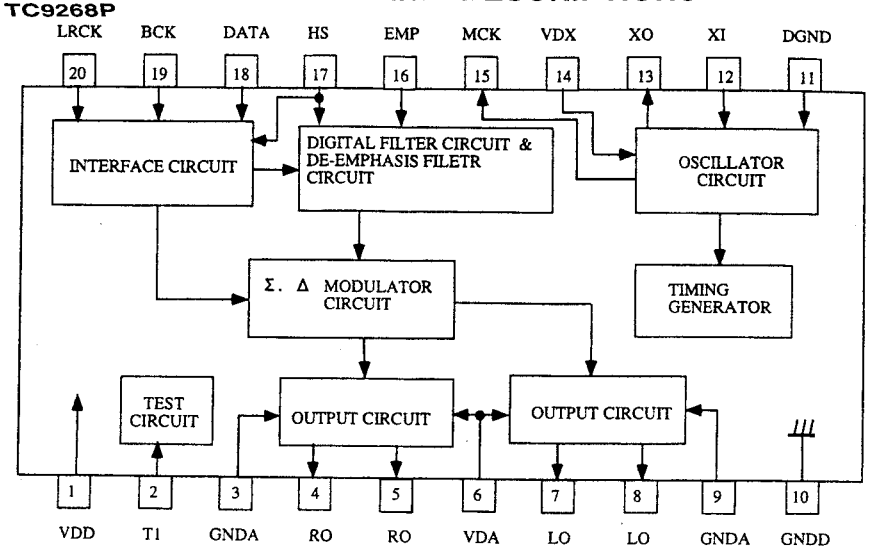
NO.	SYMBOL	DESCRIPTION
1	ch1-OUT A	Driver channel 1 negative output
2	ch1-OUT B	Driver channel 1 positive output
3	ch1-IN A	Driver channel 1 input
4	ch1-IN B	Driver channel 1 gain adjustment pin
5	Tr-B	Connect to external transistor base
6	Vreg OUT	Constant voltage output (connect to external transistor collector)
7	MUTE	Mute control pin
8	GND	Ground
9	ch2-IN B	Driver channel 2 gain adjustment pin
10	ch2-IN A	Driver channel 2 input
11	ch2-OUT B	Driver channel 2 positive output
12	ch2-OUT A	Driver channel 2 negative output
13	GND	Substrate ground
14	OP OUT	Operational amplifier output
15	OP IN (-)	Operational amplifier negative input
16	OP IN (+)	Operational amplifier positive input
17	ch3-OUT A	Driver channel 3 negative output
18	ch3-OUT B	Driver channel 3 positive output
19	ch3-IN A	Driver channel 3 input
20	ch3-IN B	Driver channel 3 gain adjustment pin
21	Vcc	Power supply
22	Vcc	Power supply
23	BIAS IN	Bias amplifier input pin
24	ch4-IN B	Driver channel 4 gain adjustment pin
25	ch4-IN A	Driver channel 4 input
26	ch4-OUT B	Driver channel 4 positive output
27	ch4-OUT A	Driver channel 4 negative output
28	GND	Substrate ground



Pin No.	Symbol	I/O	Description
1	FEO	O	Output pin for focusing error amplifier
2	FEI	I	Input pin of focusing error
3	FDFCT	I	Capacitor connection pin for time constant when defect
4	FGD	I	Capacitor connection pin for high frequency gain Down of focusing servo
5	FLB	I	Time constant circuit connection pin for low frequency gain up of focusing servo
6	FE_O	O	Focusing drive output pin
7	FE_M	I	Inverted input pin of focusing amplifier
8	SRCH	I	Time constant circuit connection pin for focusing search waveform
9	TGU	I	Time constant circuit connection pin for tracking high frequency gain changeover
10	TG2	I	Time constant circuit connection pin for tracking high frequency gain changeover
11	FSET	I	Peak setting pin of phase compensation of focusing tracking
12	TA_M	I	Non-inverted input pin of tracking amplifier
13	TA_O	O	Inverted input pin of tracking amplifier
14	SL_P	I	Non-inverted input pin of sled amplifier
15	SL_M	I	Inverted input pin of sled amplifier
16	SL_O	O	Sled drive output pin
17	ISET	I	Input pin to decide focusing search, tracking jump, and height of sled kick.
18	VCC	-	Power supply pin (+5V)
19	CLK	I	Serial data transfer clock input pin form microprocessor
20	XLT	I	Latch input pin from microprocessor
21	DATA	I	Serial data input pin from microprocessor
22	XRST	I	Reset input pin
23	C.OUT	O	Signal output pin to count the track numbers.
24	SENS	O	FZC. DFCT,TZC etc. signal output pin from command of microprocessor
25	FOK	O	Comparator output pins of focus OK.
26	CC2	I	Defect bottom hold input pin
27	CC1	O	Defect bottom hold output pin
28	CB	I	Capacitor connection pin for defect bottom hold
29	CP	I	Mirror hold capacitor connection pin
30	RF_I	I	RF summing amplifier input pin
31	RF_O	O	RF summing amplifier output pin
32	RF_M	I	RF summing inverted amplifier output pin
33	LD	O	APC amplifier output pin
34	PHD	I	APC amplifier input pin
35	PHD1	I	Inverted input pin of RF I-V amplifier
36	PHD2	I	Inverted input pin of RF I-V amplifier
37	FE_BIAS	I	Bias adjustment pin of focusing error amplifier
38	F	I	Inverted input pin of I-V amplifier of F
39	E	I	Inverted input pin of I-V amplifier of E
40	EI	-	Gain adjustment of I-V amplifier E
41	VEE	-	Ground
42	TEO	O	Tracking error amplifier output pin
43	LPFI	I	Comparator input pin for balance adjustment
44	TEI	I	Tracking error input pin
45	ATSC	I	Window comparator input pin for ATSC detector
46	TZC	I	Tracking zero-cross comparator input pin.
47	TDFCT	I	Capacitor connection pin for time constant when defect
48	VC	O	DC voltage output pin of (VCC+VEE)/2

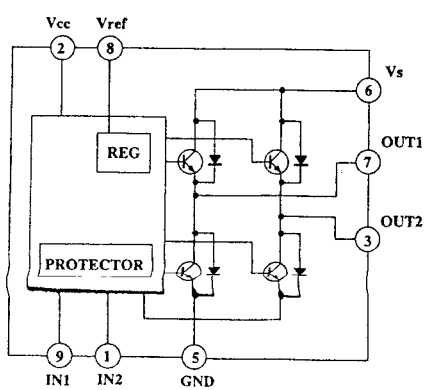
IC BLOCK DIAGRAMS AND DESCRIPTIONS

TC9268P



Pin No.	Symbol	I/O	Description	Pin No.	Symbol	I/O	Description
1	VDD	-	Power supply pin for digital section	11	GNDX	-	Ground pin for oscillator section
2	T1	I	Test pin. Connect to the ground.	12	XI	I	Connection pins for crystal oscillator
3	GNDA	-	Ground pin of analog section for right channel	13	XO	O	
4	RO	O	Data output pin of right channel	14	VDX	-	Power supply pin for crystal section
5	RO	O	Data inverted output pin of right channel	15	MCK	O	System clock output pin
6	VDA	-	Power supply pin for analog section	16	EMP	I	De-emphasis filter control pin
7	LO	O	Data inverted output pin of left channel	17	HS	I	Speed select pin
8	LO	O	Data output pin of left channel	18	DATA	I	Data input pin
9	GNDA	-	Ground pin of analog section for left channel	19	BCK	I	Bit clock input pin
10	GNDD	-	Ground pin for digital section	20	LRCK	I	LR clock input pin

TA7291S



INPUT		OUTPUT		
IN1	IN2	OUT1	OUT2	MODE
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

CCW:Counter clockwise direction
CW:Clockwise direction

PRINTED CIRCUIT BOARD PARTS LIST

MAIN CIRCUIT PC BOARD (NAAR-6646-1A/1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Photo coupler	
Q304	24120031	TOTX178A
	ICs	
Q101	22241093	CXA1782BQ
Q102	22241066	BA6398FP
Q703	22240239	TA7291S
Q301	22240487A	CXD2500BQ
Q302	22240792	TC9268P
Q401,Q402,Q501	22240191	NJM4565D-D
Q901	222780055JRC or	78M05(NJM78M05FA) or
	222780055MAT	78M05(AN78M05F)
	Transistors	
Q104,Q904	2211504	2SA950-Y
Q105,Q702	2212600 or	DTA124ES or
	2213580 or	RN2203 or
	2215780	KRA103M
Q403,Q404	2213631 or	RN1241-A or
	2213632	RN1241-B
Q751	221281 or	DTC114YS or
	2213570	RN1207
Q752	2211455	2SA1015-GR
Q907	2202705 or	2SD2394-E or
	2202706	2SD2394-F
	Diodes	
D101,D703,D704	223205 or	1SS270A or
	223163	1SS133
D706	223205 or	1SS270A or
	223163	1SS133
D901-D905	22380260 or	RL1N4003 or
	22380035	GP104003E
D906	224472004	MTZJ20D
D910	224470753	MTZJ7.5C
	Transformer	
T901	2301409	⚠ NPT-1369P,Power transformer<P,PT>
	2301427	⚠ NPT-1369DG,Power transformer<WT>
	Coil	
L101	233454K100	NCH-1452 100K
	Oscillator	
X301	3010308	HC-49/U0316.9344M
	Capacitors	
C101,C102,C306	354721019	100μF,6.3V,Elect.
C104,C105,C115	374721034	0.01μF±5%,50V,Plastic
C106,C109	374724744	0.47μF±5%,50V,Plastic
C107,C124	374722224	2200pF±5%,50V,Plastic
C108,C751	374721024	1000pF±5%,50V,Plastic
C110,C111,C113	374721044	0.1μF±5%,50V,Plastic
C117	354763309	33μF,35V,Elect.
C118	354780339	3.3μF,50V,Elect.
C120	374723334	0.033μF±5%,50V,Plastic
C121,C123,C125	374721034	0.01μF±5%,50V,Plastic
C128,C310	354722219	220μF,6.3V,Elect.
C129,C302	374721034	0.01μF±5%,50V,Plastic
C136,C910	354744709	47μF,16V,Elect.
C138,C432	354742219	220μF,16V,Elect.
C170	354780109	1μF,50V,Elect.
C301,C450	354784799	0.47μF,50V,Elect.
C304	374724734	0.047μF±5%,50V,Plastic
C305	374721524	1500pF±5%,50V,Plastic
C323,C324,C923	354722219	220μF,6.3V,Elect.
C327,C328	374721044	0.1μF±5%,50V,Plastic
C411,C412	374721824	1800pF±5%,50V,Plastic
C413,C414	374726824	6800pF±5%,50V,Plastic
C417,C418	354782209	22μF,50V,Elect.
C434,C922	354742219	220μF,16V,Elect.
C501,C502	354744709	47μF,16V,Elect.
C752,C112	354780479	4.7μF,50V,Elect.
C753	354721029	1000μF,6.3V,Elect.
C901,C902	393343327S	3300μF,16V,Elect.
C906	354781019	100μF,50V,Elect.
C907,C920	354764709	47μF,35V,Elect.
C908,C909	354741019	100μF,16V,Elect.
C951	3500077	⚠ DE7150F-472M
	Resistors	
R112,R123	5210263	N06HR20KBC,Trimming

NOTE : <P> : European model only
<PT> : Asian model only
<WT> : Taiwanese model only

CIRCUIT NO.	PART NO.	DESCRIPTION
	Sockets	
JL501a	25050271	NSCT-7P99
P101	25051974	NSCT-16P1761
P102a	2006341015UL	NSAS-10P0181
P103a	2006341210UL	NSAS-12P0232
P701a	25051832 or	NSCT-25P1619 or
	25051291 or	NSCT-25P1080 or
	25052034 or	NSCT-25P1821 or
	25052221 or	NSCT-25P2118 or
	25052071 or	NSCT-25P1858 or
	25052258	NSCT-25P2155
	Plugs	
P104	25055045	NPLG-4P33
P105	25055038	NPLG-2P29
P903a	25055675 or	NPLG-2P631 or
	25056003	NPLG-2P954
	Terminals	
P401	25045371	NPJ-2PDWR214
P402	25045601	NPJ-2PDB409
	Switch	
S902	25065437	⚠ NSS-22157P <WT>
	Radiator	
Q901a	27160145-1	RAD-51
	Holder	
E701	27190990	Holder FL
	Cover	
C951a	27301216	⚠ SB1925A

DISPLAY CIRCUIT PC BOARD(NADIS-6647-1A/1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	FL tube	
Q709	212109	8-BT-125GK
	Remote sensor	
Q712	241330	PIC-26043TE2
	ICs	
Q701	22241378R3	MPD78042FGF-107
Q705	22241210	BMR-0101D
	Transistor	
Q702	2212600	DTA124ES
	Diodes	
D705	224470562	MTZJ5.6B
D780	224470512	MTZJ5.1B
	Oscillator	
X701	3010229	CE-LOCK EFOEC004A4
	Capacitors	
C701,C703	353721019	100μF,6.3V,Elect.
	Switches	
S701-S709	25035652 or	NPS-111-S604 or
	25035704	NPS-111-S667
	Socket	
P701b	25051329 or	NSCT-25P1118 or
	25051869	NSCT-25P1656

POWER SWITCH PC BOARD(NASW-6648-1A/1B),

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitor	
C950	3500196S	⚠ RE275V-103M
	Switch	
S901	25035703	⚠ NPS-111-L666P,Power switch

VOLUME PC BOARD (NAETC-6650-1A/1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	IC	
Q502	22240191	NJM4565D-D
	Capacitors	
C503,C504	354744709	47μF,16V,Elect.
	Resistor	
R507	5112463	N09RGL20KB20M,Phones level
	Terminal	
P502	25045255	YKB26-5009
	Socket	
JL501b	25051111	NSCT-7P898

NOTE : THE COMPONENTS IDENTIFIED BY THE MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND Elect.RIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CD ADJUSTMENT PROCEDURES

Preparation

Set the trimming resistors R112 and R123 to center.

A.Focus offset adjustment

1. Connect the oscilloscope to pin1(RF) of the socket P105 and GND to pin2(VR).
2. Load the test disc YEDS-18 on the tray and play the track 2.
3. Adjust the trimming resistor R112 so that the waveform(eye pattern) on the oscilloscope becomes maximum.
4. Remove the oscilloscope.

B.Focus gain adjustment

1. Set the output of the audio oscillator to 1kHz and 1~1.5Vp-p.
2. Connect the oscilloscope and audio oscillator as shown below. (Refer to Fig-1)

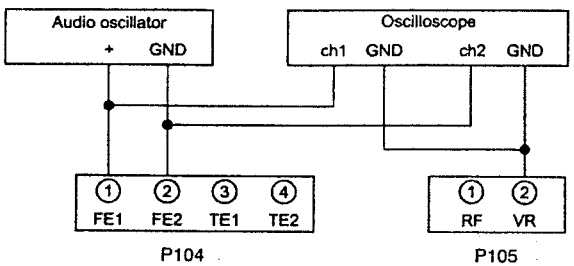


Fig-1

3. Load the test disc YEDS-18 on the tray and play the track 2.
4. Adjust the trimming resistor R123 so the signal of channel 2 on the oscilloscope becomes 1.25 times of channel 1. (Refer to Fig-2)
5. Remove the oscilloscope and audio oscillator.

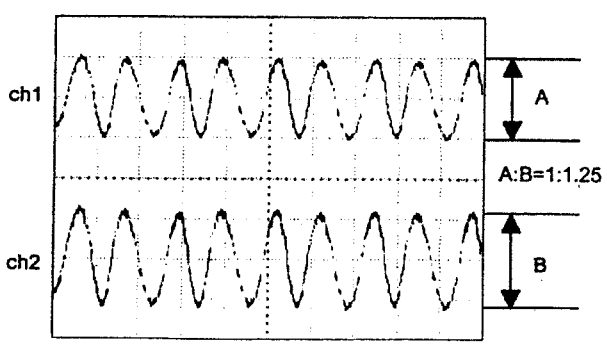
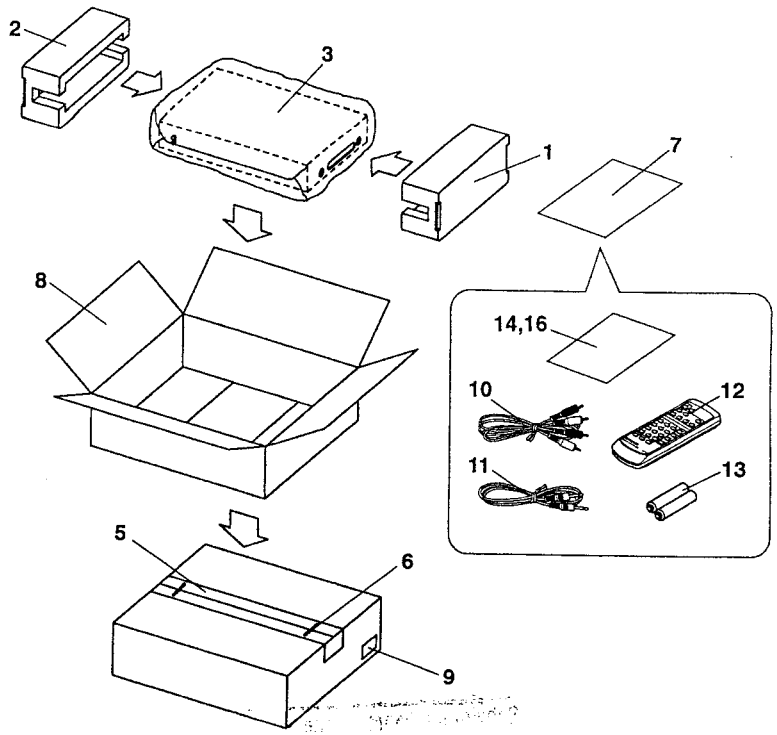


Fig-2

PACKING VIEW



PACKING VIEW PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	29091692	Pad L
2	29091693	Pad R
3	29100037-1A	650*500,Polybag
4	261504	Paper tape
5	29110071 or	PP Tape
	29110098	PP Tape
6	282301	Staple
7	29100097-1A	250*250,Polybag
8	29053444	Carton box <B>
	29053445	Carton box <S>
	29053467	Carton box <G>
9	29362460	Label EAN <B>
	29362461	Label EAN <S>
	29362481	Label EAN <G>

REF.NO.	PART NO.	DESCRIPTION
10	2010326 or	Audio cord
	2010381	Audio cord
11	2010200	RI cord
12	24140402	RC-402C,Remote controller
13	3010054	UM-3,Battery
14	29342748	Instruction manual E
	29342749	Instruction manual U6 <P>
	29342750	Instruction manual T<PT,WT>
15	25055911	Conversion plug <WT>
16	29355316	Instruction sheet U9 (CD)

NOTE : <P> : European model only
<PT> : Asian model only
<WT> : Taiwanese model only
<S> : Silver model only
<B> : Black model only
<G> : Golden model only

ONKYO U.S.A. CORPORATION
200 Williams Drive, Ramsey, N.J. 07446, U.S.A.
Tel: 201-825-7950 Fax: 201-825-8150 E-mail: onkyo@onkyousa.com

ONKYO EUROPE ELECTRONICS GmbH
Industriestrasse 20, 82110 Germering, GERMANY
Tel: 089 84 93 20 Fax: 089 84 93 226 E-mail: info@onkyo.de

ONKYO CHINA LIMITED
Units 2102-7, Metroplaza Tower I, 223 Hing Fong Road, Kwai Chung,
N.T., HONG KONG Tel: 852 2429 3118 Fax: 852 2428 9039

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